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ABSTRACT

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Action Control, Motivation, and Academic Achievement

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Abstract

Kuhl's (1985) theory of action control focuses on the processes that protect a current intention from competing action tendencies. Applied to the educational domain, the theory would predict that students who are action-oriented would be better equipped to deal with various challenges, such as failing a test, thereby increasing the likelihood of success in college. In the present study, college students' action orientation and motivational profile (success orientation and failure avoidance) was measured, and the effect of these individual differences on emotion control, task involvement, attributions, etc. was assessed. The results show that action orientation was associated with greater control over emotions, less concern about being interrupted while completing a task, and less physiological arousal and cognitive interference during test-taking. Indirectly, action orientation also contributed to better performance on an in-class test.

Action Control, Motivation, and Academic Achievement

Current models of student learning suggest that achievement striving and academic achievement is best understood as a complex interaction of motivational, cognitive, and emotional factors (e.g., Covington, 1993; Pintrich, 1989). Moreover, the importance of volition is increasingly being recognized (Corno, 1989; 1993). The present study was designed to examine the effect of college students' volitional style or action-orientation, in combination with their motivational profile, on action control strategies, attributions, and scholastic achievement.

The Theory of Action Control

The notion of volition or action control, as conceptualized by Julius Kuhl (1982; 1985), refers to the processes that enable individuals to enact their intentions or goals, despite the presence of competing action tendencies. A major focus of Kuhl's action control theory are the strategies that enable people to protect an intention from competing action alternatives. These action control strategies are invoked when some obstacle is encountered while executing an intention. In the case of students, such obstacles or challenges may include distractions from both internal and external sources. For example, the student who intends to study for an upcoming test may be required to block out thoughts of competing, and perhaps more desirable action alternatives, such as going on a date with a boy or girl friend. Failure experiences, such as receiving a poor grade on a test or assignment can also cause difficulties for students by evoking repetitive "worry" thoughts, which would interfere with performance on subsequent tasks. Besides such internal distractions, external ones such as loud music played by a roommate may also pose a challenge to students' studying efforts.

Kuhl (1985) describes six general action control strategies that maintain and protect a current intention under these circumstances, thereby allowing it to be carried out. These include: 1) Selective control of attention, which involves focusing attention exclusively on information that is related to the current intention; 2) Encoding control, referring to the selective encoding of information that is related to the current intention; 3) Economy of information processing, which involves optimizing the length of information processing and preventing excessive weighing of action alternatives; 4) Control of emotions, whereby emotions such as depression or worry that might interfere with enacting an intention are inhibited. Conversely, feelings that promote an action tendency are aroused. 5) Motivation control, which relates to strengthening the motivation that gave rise to the current intention by, for example, focusing on the positive consequences of an intended action. 6) Lastly, environmental control refers to creating an environment that maximizes execution of an intention.

The ability to efficiently enact intentions is, in part, affected by individuals' volitional style, or action orientation, a relatively stable disposition to effectively execute action tendencies (Kuhl, 1985). Action orientation is conceptualized as a continuum ranging from action-oriented to state-oriented, with greater action orientation facilitating enacting

intentions. For example, research shows that, unlike state-oriented subjects, action-oriented individuals do not experience performance deficits following failure (Brunstein & Olbrich, 1985; Kuhl, 1981).

In the experiment by Brunstein and Olbrich (1985), for example, action versus state-oriented subjects completed a logical reasoning task and were led to believe that they were failing. The researchers were interested in subjects' attributions and emotional reactions following this experience, as well as their strategy use on a subsequent reasoning task on which they received veridical feedback. It was found that action-oriented individuals persisted in using effective strategies following failure, while maintaining a sense of competence. In contrast, state-oriented subjects exhibited increased negative affect, associated with lack of ability statements and verbalization of inappropriate strategies to solving the reasoning task.

Similarly, in a further laboratory experiment (Menec, Schonwetter, Struthers, & Perry, 1993), action- and state-oriented college students were exposed to two challenges: First, students were required to write a difficult test, being classified into failure and success groups based on their perceived performance on the test; Second they viewed a videotaped lecture, presented by either a low or high expressive instructor. The effect of these two challenges on students' performance on a lecture-based achievement test was then examined.

The typical response to the low expressive lecture is one of utter boredom. In terms of action control theory, a low expressive lecture style should make it difficult for students to maintain their intention to attend to the lecture, necessitating the use of action control strategies. Action-oriented students should therefore be at an advantage in this situation. Similarly, they should be able to deal with academic failure more easily than state-oriented students who may be absorbed by ruminative thoughts following this experience, which would interfere with their concentration during the lecture. The results of the study are consistent with this assumption. It was found that action-oriented students performed better on the achievement test than their state-oriented counterparts, despite previous failure and low expressive teaching. In contrast, no significant effects were obtained in the high expressive teaching condition. This makes sense, since students' attention would presumably not be taxed under these circumstances and action control strategies would not be required.

In sum, action control is an important contributor to task performance by enabling individuals to carry out their intentions to complete a goal. The ability to invoke such strategies is likely to be particularly critical for college students, since they are faced with a relatively unstructured school system. Unlike in high school, where teachers more closely monitor students' progress by administering frequent quizzes or assignments, students at the college level are required to take greater initiative in learning course material. Teachers' guidance at this level is frequently limited to handing out a course syllabus at the beginning of the academic term and providing periodic reminders of upcoming tests. Students can therefore no longer rely on teachers, or perhaps parents, to protect their

intention to learn, but have to be able to invoke action control strategies to do so. Not surprisingly, the transition from high school to university would therefore be particularly challenging for students.

Motivation and Academic Achievement

Although it has been argued that action orientation should be important for students' achievement striving and scholastic performance, a further factor that clearly plays a major role in students' success in college is motivation. Motivation differs from action control in that the latter is thought to protect an intention, whereas motivation contributes to the formation of intentions (Kuhl, 1984). One influential theory of achievement motivation is that of need achievement proposed by Atkinson (1957), which has more recently been examined in the educational domain by individuals like Covington (see Covington, 1993 for a review). According to need achievement theory, individuals have a disposition to either approach success or avoid failure. Critical to these two dispositions are their associated cognitions (Covington, 1993). While success-oriented individuals are confident in their abilities to master tasks and, as a result, tend to attribute failure to insufficient effort, failure avoiders doubt their abilities and are more likely to ascribe poor performance to lack of ability. These attributions, in turn, have consequences for emotions, expectations of future success and, ultimately, performance on subsequent task (Weiner, 1986). For example, students who believe that they failed a test because they lack the ability to perform well would likely experience some negative affect, such as lowered self-esteem or shame, as well reduced expectations of success in the future.

The educational consequences of success orientation and failure avoidance have been examined in a number of studies (e.g., Covington & Omelich, 1979; 1988). Covington and Omelich (1988) focused on the sequential effects of these two motivational styles on a variety of cognitive and motivational indices, including among others: students' perceptions of their abilities to perform well in a course, intentions to expend the effort necessary to do well in the course, fears of appearing incompetent as a consequence of poor performance, and anxiety. As expected, success orientation was related to confidence in having the ability to do well, and being willing to expend the necessary effort. Conversely, failure avoidance was associated with fears of appearing incompetent and anxiety. Indirectly, success orientation was predictive of better performance in the course, whereas failure avoidance was associated with poorer performance.

Thus, both students' motivational profile and action orientation should contribute to students' academic behaviors and achievement. However, while the literature linking student motivation and academic achievement is voluminous, the importance of action orientation has received relatively little attention in the educational domain. The purpose of the present study was to focus on this issue. More specifically, we examined a sequential model incorporating college students' action orientation, success orientation and failure avoidance, action control strategies, attributions for failure, and achievement on a course test.

The proposed model was based on the assumption that the three dispositional variables would affect general action control strategies and attributions which, in turn, would predict strategies in a task-specific context. As such, students' general ability to control their emotions and being able to focus on a task at hand was assessed. To obtain information about more task-specific action strategies, their ability to control physiological arousal and interfering thoughts during test-taking was also measured. Lastly, students were asked to report their grade on their last introductory psychology test.

It was expected that action orientation would be negatively related to emotional responses, reflecting an ability to control emotions, as well as being positively related to task involvement. Less emotionality in turn should be associated with less physiological arousal during test-taking, whereas greater task involvement should be related to less cognitive interference. Reduced arousal and fewer "worry" thoughts were then expected to contribute to better performance on the test. Similarly, it was anticipated that students' motivational profiles would impact on attributions, with success-oriented individuals attributing failure to effort, but failure avoiders ascribing poor performance to ability. These attributions were then expected to affect physiological arousal and thought processes during test taking.

Method

Subjects

Participants were 299 male and female students at a Midwestern Canadian university who were enrolled in an introductory psychology course. They received credit towards a course requirement for their participation in the study.

Materials

Action orientation. A 12-item subscale of the Action Control Scale (Kuhl, in press) was used to assess action orientation. This scale focuses on preoccupation with negative experiences and consists of a forced-choice format. For example, one of the questions reads as follows: "When I'm told that my work has been completely unsatisfactory: a) I don't let it bother me for too long; and b) I feel paralyzed." Alternative "a" in this case would reflect an action orientation, whereas alternative "b" would be considered state-oriented.

Success orientation and failure avoidance. Students' motivational profile was measured with two scales developed by Covington and his associates (Covington & Omelich 1988). The success orientation questionnaire includes 21 items and focuses on the propensity for risk-taking, realistic goal setting, incentive value of success, work-ethic values, and self-confidence. The failure avoidance questionnaire consists of 13 questions, measuring the tendency for unrealistic goal standards, concerns about failure, doubts about one's ability, and a disposition for self-criticism. All 24 questions were rated on 5-point scales (1=not very true of me; 5=very true of me).

Emotion control. Students' tendency to experience emotions while being unable to control them was measured with 4 items, such as "If I were to become angry at work, I would remain 'keyed' up for the rest of the day" (1=extremely uncharacteristic; 5=extremely characteristic). It should be noted that these items were scored in terms of emotionality, with lower scores therefore reflecting greater emotion control.

Task involvement. Two questions were included to measure students' ability to concentrate on the task at hand. Ratings were made on 5-point scales (1=extremely uncharacteristic; 5=extremely characteristic).

Attributions. Three questions assessed students' tendency to attribute failure to lack of ability or skill. An example is: "If I were to receive a low mark it would cause me to question my academic ability (1=strongly disagree; 5=strongly agree). Similarly, three items were used to measure the tendency to attribute academic failure to effort.

Physiological arousal. An 8-item questionnaire was included to measure physiological arousal while taking tests. These items were taken from Sarason's (1975) Test Anxiety Scale (TAS). The scale uses a true-false format, with higher scores indicating greater arousal.

Cognitive interference. As in the case of physiological arousal, questions measuring cognitive interference were taken from the TAS (Sarason, 1975). Six items were included which measured the tendency to be bothered by test-irrelevant thoughts in test situations, as well as worrying about performing poorly on the test. These items were again answered in terms of "true" or "false".

Achievement test. A self-report measure was used to assess academic achievement. Students were asked to indicate what their most recent psychology test score was (1=less than 50%; 10=91- 100%).

Procedure

Students were administered a questionnaire including the individual differences measures, as well as all the other items. The study was run in group sessions.

Results

Zero-order correlations indicated that, as expected, action orientation was associated with less emotionality or, conversely, greater emotion control (r=-.37, see Table 1 to zero-order correlations). Somewhat unexpectedly, the correlation between action orientation and task involvement was also negative (r=-.22). Inspection of the two questions thought to reflect task involvement revealed that this effect was due to one question: Action-oriented students felt less distracted by interruptions while completing a project (r=-.29). This negative correlation is therefore not too surprising since action-oriented individuals should be better equipped to deal with distractions, whereas more state-oriented students would experience greater difficulty in regaining their concentration.

Insert Table 1 about here

Greater action orientation was further associated with a reduced tendency to make ability attributions (r=-.29). Similarly, negative correlations were found between action control and physiological arousal and interfering thoughts during test taking (r=-.49 and -.41). It did not correlate with effort attributions (r=.07) or achievement (r=-.04), however. In terms of success orientation, the expected correlation with effort attributions did not emerge, although failure avoidance was associated with ability attributions for failure (r=.46). Moreover, not too surprisingly, failure avoidance was also positively related to emotionality, physiological arousal, and cognitive interference (see Table 1 for correlation coefficients).

To examine the proposed sequence of events, a regression-based path analysis was then performed (see Figure 1). As Figure 1 shows, action-orientation had direct effects on emotionality, task involvement, physical arousal, interference, and to a lesser degree, on effort attributions. Moreover, a marginally significant effect was found for achievement, although it was in a direction opposite to predictions. That is, action orientation was negatively related to achievement (standardized path coefficient p=-.12), a finding that may reflect a Type I error.

Insert Figure 1 about here

Success-orientation and failure-avoidance produced some expected effects, in that failure avoidance was associated with ability attributions (p=.43), which in turn was linked to cognitive interference (p=.12) and, ultimately, poorer performance (p=-.17). On the other hand, success orientation did not relate to effort attributions, but was only negatively associated with interfering thoughts (p=-.16) and as as result, contributed to higher achievement on the introductory psychology test. The direct positive path between success orientation and achievement (p=.11), although only marginally significant, is also consistent with the notion that this motivational profile is conducive to success in college.

Discussion

The results of this study are consistent with Kuhl's (1985) action control theory. Action orientation was predictive of less emotionality or, alternatively, greater emotion control, and less concern about being interrupted when working. Although its was expected that emotion control and task involvement would in turn predict physiological arousal and cognitive interference in test- taking situations, these effects were negligible. However, action orientation was directly predictive of use of effective action control strategies while taking tests, with action-oriented individuals again being at an advantage. That is, action oriented suffered less from physiological arousal while taking tests. They were also less likely to experience irrelevant thoughts and doubts during test-taking which, in turn, was predictive of higher achievement on the in-class test.

Furthermore, action orientation had indirect effects on achievement via effort attributions and interfering thoughts, although the former effect was small. Interestingly, physiological arousal did not affect achievement. This finding is consistent with research on test anxiety, which indicates that cognitive interference, but not physiological arousal, accounts for performance deficits in test anxious students (e.g., Deffenbacher, 1978).

The negative path coefficient linking action orientation with task involvement was contrary to expectations although, in hindsight, it makes theoretical sense. Since action-oriented students should have a repertoire of effective action control strategies they would also be less distracted by interruptions. These students may, for example, deal with such interruptions by simply concentrating more on the task at hand, whereas their more state-oriented counterparts would have greater difficulty doing so.

The findings for success orientation were consistent with previous research (Covington & Omelich, 1988) which shows that this motivational profile contributes to academic success. Unexpectedly, however, success orientation was not associated with effort attributions for failure, but directly contributed to less cognitive interference and better performance. In contrast, the anticipated attributional profile emerged for failure avoidance, in that it was positively related to ability attributions in failure situations. Moreover, these ability doubts translated into cognitive interference during test-taking and, consequently, poorer performance on the achievement test.

It is interesting to note that the findings for failure avoidance in many ways mirrored those for action orientation. For example, while action orientation was negatively related to physiological arousal in testing situations, failure avoidance was positively related to this variable. Similarly, both action orientation and failure avoidance were predictive of task involvement, but in the opposite direction. Two noteworthy exceptions to this pattern emerged, however: Only action orientation, but not failure avoidance, was related to emotion control. Conversely, only failure avoidance, but not action orientation, was associated with ability attributions. These findings make theoretical sense and reflect a critical difference between these two individual differences.

Action orientation describes individuals' ability to enact intentions. More specifically, the type of action orientation examined in the present study focuses on people's preoccupation with negative experiences, with some individuals being able to easily get over such events, whereas others tend to excessively ruminate about them. Being able to control one's emotions, one of the action control strategies described by Kuhl (1985), is likely to be an important strategy for dealing with negative experiences. Action-oriented students who, as the present studies shows, are more likely to evoke the strategy of emotion control would therefore be at an advantage in dealing with negative events such as poor grades on tests or assignments, thereby increasing the likelihood of succeeding in the future.

Thus, action orientation concerns people's actual ability to deal with challenges. In contrast, failure avoidance and success orientation are motivational constructs, dealing with individuals' perceived ability to accomplish tasks. Failure avoiders not only fear negative outcomes, but also lack confidence in their ability to master tasks (Covington, 1993). As such, they tend to attribute failure to lack of ability, as was the case in the present study. These attributions in turn would have consequences for subsequent emotions, expectations, and achievement striving (Weiner, 1986). Although these additional variables were not examined in this study, they would be major contributors to students' academic achievement.

In conclusion, although the importance of volition is increasingly being recognized in the educational literature (e.g., Corno, 1993), the notion of action orientation as an individual differences variable has received relatively little attention to date. The present study presents a first step in investigating the potential usefulness of this construct in the educational domain. The results of our study show that although action orientation is significantly correlated with students' motivational pattern, particularly failure avoidance ($r=-.44$), it also uniquely contributes to students' emotional and cognitive profile. Consistent with action control theory (Kuhl, 1985), action orientation was associated with greater control over emotions, and less concern with being interrupted while working on a project. Furthermore, action orientation was related to less physiological arousal and cognitive interference during test-taking and, ultimately, contributed to enhanced academic performance.

While the results of the present study are promising, a task for the future will be to examine more closely the action control strategies described by Kuhl (1985) in an educationally relevant context. Students who are able to invoke a variety of these strategies, such as selectively attending to the subject matter while tuning out any distractions from classmates, or being able to create a quiet work environment, should perform better in college than individuals who lack such strategies. In this respect, the question of interest is not only whether students perform better on tests or examinations but, perhaps more importantly, how and why action control strategies contribute to effective processing of subject matter. Kuhl's (1985) theory of action control provides a useful framework for investigating these issues.

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Table 1: Zero-Order Correlation Coefficients

	2	3	4	5	6	7	8	9
1 Action Orientation	.158	-.442	-.371	.070	-.285	-.490	-.372	-.041
2 Success Orientation		.040	-.113	-.016	-.002	-.072	-.188	.134
3 Failure Avoidance			.222	.044	.455	.417	.433	-.054
4 Emotionality				-.023	.150	.294	.208	.032
5 Effort					-.111	-.105	.006	-.153
6 Ability						.302	.306	-.039
7 Physiological Arousal							.519	-.026
8 Cognitive Interference								-.155
9 Achievement								

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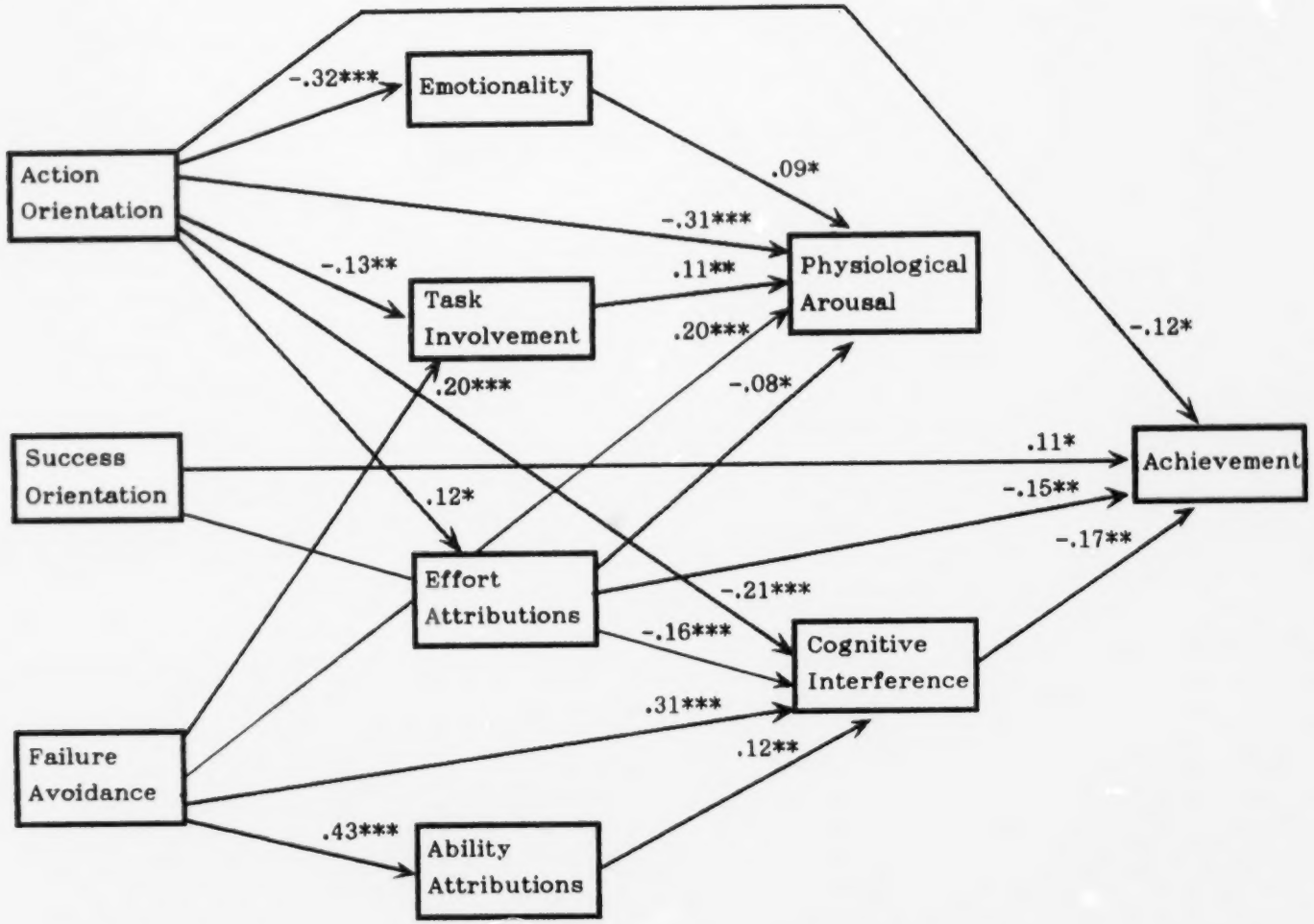

Note: * p < .10; ** p < .05; *** p < .01.